

AC	AIR CONDITIONING
ACH	AIR CHANGES PER HOUR
ACT	ACOUSTICAL TILE CEILING
AD	ACCESS DOOR
ADD'L	ADDITIONAL
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLING UNIT
ALUM	ALUMINUM
AMP/AMPS	AMPERAGE
AP	ACCESS PANEL
ARCH	ARCHITECT
BC	BEADED COLLAR
BDD	BACKDRAFT DAMPER
BF	BELOW FLOOR
BHP	BRAKE HORSEPOWER
BLDG	BUILDING
BOD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BS	BIRD SCREEN
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
CAP	CAPACITY
CC	CONTROLS CONTRACTOR
CD	CEILING DIFFUSER/CONDENSATE DRAIN
CDWR	CONDENSER WATER RETURN
CDWS	CONDENSER WATER SUPPLY
CFM	CUBIC FEET PER MINUTE
CHWR	CHILLED WATER RETURN
CHWS	CHILLED WATER SUPPLY
CLG	CEILING
COL	COLUMN
CONC	CONCRETE
COND	CONDENSATE
CONN	CONNECT/CONNECTED/CONNECTION
CONT	CONTINUOUS/CONTINUATION
CONTR	CONTRACTOR
COORD	COORDINATE
COP	COEFFICIENT OF PERFORMANCE
CT	COOLING TOWER
CU	CUBIC/CONDENSER UNIT
CW	DOMESTIC COLD WATER/CONDENSER WATER
DB	DUCTBOARD/DRY BULB
DBA	DECIHEL
DDC	DIRECT DIGITAL CONTROL
DEFL	DEFLECTION
DEG	DEGREE/ DEGREES
DG	MODULAR DIFFUSER (GWB CEILING)
DIA	DIAMETER
DMPR	DAMPER
DN	DOWN
DT	MODULAR DIFFUSER ("T-BAR" CEILING)
DWG	DRAWING
EXH	EXHAUST
EA	EACH
EAT	ENTERING AIR TEMPERATURE
EC	EGGCRATE GRILLE/END CAP/ELEC CONTRACTOR
EER	ENERGY EFFICIENT RATING
EF	EXHAUST FAN
EFF	EFFICIENCY
EL	ELEVATION
ELEC/ELECT	ELECTRICAL/ELECTRIC
EP	END PLUG
EMCS	ENERGY MANAGEMENT CONTROL SYSTEM
ENT	ENTERING
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
F	FAHRENHEIT
FAC	FIRE ALARM CONTRACTOR
FD	FIRE DAMPER
FDC	FIRE DEPARTMENT CONNECTION
FF	FINISHED FLOOR
FIC	FURNISHED AND INSTALLED BY CONTRACTOR
FIO	FURNISHED AND INSTALLED BY OWNER
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE
FLR	FLOOR
FOB	FLAT ON BOTTOM
FOIC	FURNISHED BY OTHERS. INSTALLED BY CONTRACTOR
FOS	FLAT ON SIDE
FOT	FLAT ON TOP
FP	FIRE PROTECTION
FPM	FEET PER MINUTE
FSD	FIRE/SMOKE DAMPER
FT	FOOT/FEET
FUT	FUTURE
FV	FACE VELOCITY
G	GRILLE
GA	GAUGE/GALLON
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GPM	GALLONS PER MINUTE
GR	GRILLE
GRD	GRILLE/REGISTER/DIFFUSER
GWB	GYPSUM WALL BOARD
HD	HEAD
HORIZ	HORIZONTAL
HP	HORSEPOWER
HR	HOUR
HSPF	HEATING SEASONAL PERFORMANCE FACTOR
HT	HEIGHT
HWTG	HIGH WALL TRANSFER GRILLE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HX	HEAT EXCHANGER

	RECTANGULAR SUPPLY AIR DUCT - TURNING UP OR TOWARD
	RECTANGULAR SUPPLY AIR DUCT - TURNING DOWN OR AWAY
	RECTANGULAR EXHAUST OR RETURN AIR DUCT - TURNING UP OR TOWARD
	RECTANGULAR EXHAUST OR RETURN AIR DUCT - TURNING DOWN OR AWAY
	ROUND DUCT - TURNING UP OR TOWARD
	ROUND DUCT - TURNING DOWN OR AWAY
	FLATOVAL DUCT - TURNING UP OR TOWARD
	FLATOVAL DUCT - TURNING DOWN OR AWAY
	DUCT OVERLAP
	BOOT TAP
	45° TAP
	VOLUME DAMPER
	CHANGE OF ELEVATION RISE(R) DROP(D)
	TRANSITION
	TURNING VANES/SPLITTERS
	DUCT MOUNTED SMOKE DETECTOR
	BACK DRAFT DAMPER
	FLEXIBLE DUCT
	AIR FLOW DIRECTION (FORCED AIR)
	AIR FLOW DIRECTION (DRAWN AIR)
	MOTOR OPERATED DAMPER
	FLEX CONNECTION
	SMOKE DAMPER
	FIRE DAMPER
	COMBINATION FIRE & SMOKE DAMPER
	SOUND TRAP
	ACCESS DOORS
	ACOUSTICALLY LINED DUCT (SOUND LINED)
	DUCT BOARD
	FABRIC DUCT
	VAV BOX
	CEILING SUPPLY AIR DIFFUSER (SHOWN WITH REDIRECTED AIR CORE)
	CEILING RETURN, TRANSFER OR EXHAUST AIR GRILLE
	SLOTTED DIFFUSER (PLAN VIEW)
	REVISION CLOUD & TRIANGLE
	ROUND DUCT SYMBOL
	FLATOVAL DUCT SYMBOL
	DEGREES SYMBOL
	POINT OF CONNECTION
	GRD TAG IDENTIFIER = TYPE-CFM SIZE
	THERMOSTAT/TEMPERATURE SENSOR
	HUMIDITY SENSOR
	SMOKE DETECTOR
	STATIC PRESSURE SENSOR
	EXISTING DUCTWORK
	DEMO DUCTWORK
	WALL-MOUNTED GRILLE
	PIPE ELBOW UP
	PIPE ELBOW DN
	DIRECTION OF FLOW
	DIRECTION OF SLOPE DOWN
	PLUG OR CAP
	GAS PRESSURE REDUCING ASSEMBLY
	SOLENOID VALVE
	PUMP
	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	REFRIGERANT LIQUID
	REFRIGERANT SUCTION
	NATURAL GAS
	LIQUID PROPANE GAS
	CONDENSER WATER SUPPLY
	CONDENSER WATER RETURN
	HEATING WATER SUPPLY
	HEATING WATER RETURN
	CONDENSATE

1. ALL WORK SHALL CONFORM TO ALL APPLICABLE CODES AND REGULATIONS, INCLUDING, BUT NOT LIMITED TO:
2009 IBC, 2009 WSEC, 2009 IMC
2. DIMENSIONS ARE TO FACE OF STUD, CONCRETE, OR MASONRY UNLESS NOTED OTHERWISE.
3. DO NOT SCALE DRAWINGS. DIMENSIONS GOVERN.
4. VERIFY ALL EXISTING CONDITIONS, DIMENSIONS, DETAILS, ETC. NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING WITH THE WORK.
5. WHEN CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK. IF ADDITIONAL QUESTIONS REMAIN, CONTACT THE ENGINEER PRIOR TO PROCEEDING.
6. ALL STRUCTURAL OPENINGS AND PLATFORMS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR UNLESS NOTED OTHERWISE.
7. DUCT SEALING AND CONSTRUCTION TO MEET SMACNA AND ENERGY CODE REQUIREMENTS. UNLESS OTHERWISE NOTED, LOW PRESSURE DUCTWORK (DOWNSTREAM OF VAV BOXES, CONSTANT VOLUME AC SYSTEMS, TOILET EXHAUSTS, ETC.) TO MEET 2" CONSTRUCTION STANDARDS WITH SEAL CLASS C. MEDIUM PRESSURE DUCTWORK (UPSTREAM OF VAV BOXES, HIGH VELOCITY EXHAUSTS, ETC.) TO MEET 4" CONSTRUCTION STANDARDS WITH SEAL CLASS A. DUCT RISERS IN SHAFTS WITH DAMPERED PENETRATIONS TO MEET 6" CONSTRUCTION STANDARDS WITH SEAL CLASS A.
8. ALL CEILING DIFFUSERS ARE 4-WAY THROW UNLESS NOTED OTHERWISE.
9. ALL DUCT DIMENSIONS ARE CLEAR INSIDE DIMENSIONS AFTER LINING HAS BEEN INSTALLED.
10. OUTSIDE AIR INTAKES ON ALL AIR HANDLING UNITS SHALL BE 10 FEET AWAY FROM ANY FUEL BURNING EQUIPMENT, AND 10 FEET AWAY FROM, OR 3 FEET BELOW ANY PLUMBING VENT OR EXHAUST OUTLET.
11. ALL AIR ECONOMIZERS SHALL BE CAPABLE OF THE FOLLOWING:
 - 0% TO 100% OF THE DESIGN SUPPLY AIR
 - CONTROLLED BY A CONTROL SYSTEM DETERMINING IF THE OUTSIDE AIR CAN MEET PART OR ALL OF THE BUILDING COOLING LOADS.
 - INTEGRATED TO PROVIDE PARTIAL COOLING EVEN WHEN MECHANICAL COOLING IS REQUIRED.
12. OUTSIDE AIR INTAKE, RELIEF, AND EXHAUST OPENINGS SHALL BE EQUIPPED WITH MOTORIZED (OR GRAVITY DAMPERS PER EXCEPTIONS IN 1412.4.1) WHICH CLOSE AUTOMATICALLY WHEN SYSTEM IS OFF OR UPON POWER FAILURE.
13. THE CONTROL SYSTEM SHALL BE 7-DAY PROGRAMMABLE, CAPABLE OF BEING SET FOR SEVEN (7) DIFFERENT DAY TYPES PER WEEK, AND CAPABLE OF A DEADBAND SETTING OF AT LEAST 5 DEGREES F (10F FOR RESIDENTIAL), BETWEEN THE HEATING AND COOLING SETPOINTS. AHU CONTROL SYSTEM SHALL INCLUDE A MICROPROCESSOR AND BE CAPABLE OF RESETTING SUPPLY AIR TEMPERATURES BY REPRESENTATIVE BUILDING LOADS.
14. RECORD DRAWINGS OF THE ACTUAL INSTALLATION SHALL BE PROVIDED TO THE BUILDING OWNER WITHIN 90 DAYS OF THE DATE OF SYSTEM ACCEPTANCE PER THE **WASHINGTON STATE** ENERGY CODE, AN OPERATING MANUAL AND MAINTENANCE MANUAL SHALL BE PROVIDED TO THE BUILDING OWNER. ALL HVAC SYSTEMS SHALL BE BALANCED AND A WRITTEN BALANCING REPORT SHALL BE PROVIDED TO THE OWNER. HVAC CONTROL SYSTEMS SHALL BE TESTED TO ENSURE THAT THEY OPERATE IN ACCORDANCE WITH SPECIFICATIONS AND APPROVED PLANS. A PRELIMINARY COMMISSIONING REPORT OF TEST PROCEDURES AND RESULTS SHALL BE PREPARED PRIOR TO ISSUANCE OF A FINAL CERTIFICATE OF OCCUPANCY. A COMPLETE FINAL COMMISSIONING REPORT OF TEST PROCEDURES AND RESULTS SHALL BE PROVIDED TO THE OWNER. COMMISSIONING, SYSTEM BALANCING, RECORD DRAWINGS AS REQUIRED PER THE **WASHINGTON STATE** ENERGY CODE.
15. MECHANICAL SYSTEMS SHALL COMPLY WITH SEISMIC RESTRAINT REQUIREMENTS OF THE BUILDING CODE, SMACNA AND ASCE 7. ALL LIFE SAFETY/HAZARDOUS MATERIAL RELATED SYSTEMS SHALL BE DEEMED AN $I_p=1.5$ FOR RESTRAINT METHODS OR AS NOTED ON THE DRAWINGS. REFER TO THE ABOVE NOTED CODES FOR INSTALLATION REQUIREMENTS AND EXCEPTIONS BASED ON SIZING, WEIGHTS AND MOUNTING HEIGHTS.
16. PROVIDE EARTHQUAKE RESTRAINTS FOR HVAC EQUIPMENT AS REQUIRED BY SMACNA SEISMIC RESTRAINT MANUAL, SEISMIC HAZARD B WIRES FOR CEILING SYSTEM ETC. SHALL NOT BE HUNG OFF HVAC EQUIPMENT OR HVAC EQUIPMENT SUPPORTS.
17. PROVIDE FIRE AND COMBINATION FIRE/SMOKE DAMPERS WHERE SHOWN ON PLANS AND WHERE REQUIRED PER CODE.
18. ALL PIPING PENETRATIONS THROUGH RATED ASSEMBLIES SHALL BE SEALED WITH AN UL APPROVED FIRE CAULKING.
19. SMOKE DETECTORS PROVIDING AUTOMATIC SHUTDOWN SHALL BE PROVIDED FOR HVAC EQUIPMENT DELIVERING IN EXCESS OF 2000 CFM [INCLUDING MULTIPLE UNITS DUCTED INTO COMMON DISTRIBUTION OR RETURN, WITH AN AGGREGATE SUPPLY GREATER THAN 2000 CFM] OR EACH STORY OF RETURN SYSTEMS OVER 15,000 CFM IN A MULTI-STORY INSTALLATION. PER CODE SMOKE DETECTORS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR UNLESS NOTED OTHERWISE. POWER-WIRING AND INTERLOCK TO FIRE ALARM SYSTEM BY ELECTRICAL CONTRACTOR AS APPLICABLE.
20. ACCESS PANELS SHALL BE PROVIDED BY MECHANICAL CONTRACTOR AND INSTALLED BY GENERAL CONTRACTOR.
21. ALL MOTOR STARTERS NOT SHOWN IN EQUIPMENT SCHEDULES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
22. FOR ALL "SEALED AIR TIGHT" SHAFTS OR ROOMS, THE FOLLOWING SHALL OCCUR:
 - ALL VERTICAL JOINTS INSIDE THE SHAFT SHALL BE PROVIDED WITH A CONTINUOUS SEAL FOR THE LENGTH OF THE JOINT, INCLUDING THE SHAFT CORNERS (BY GC)
 - TOP AND BOTTOM WALL TRACKS SHOULD BE CAULKED ALONG THEIR ENTIRE LENGTH (BY GC)
 - ANY FLOOR DECKING PERPENDICULAR TO THE SHAFT SHALL BE CAULKED (BY GC). FILLING WITH ROCK WOOL IS NOT ACCEPTABLE
 - ANY PENETRATIONS OF THE SHAFT CONSTRUCTION (DUCTWORK, CONDUIT, PIPING, ...) SHALL BE SEALED ON BOTH SIDES OF THE PENETRATION.
 - USE SECTION 905 OF THE 2009 **IBC** FOR MAXIMUM ALLOWABLE LEAKAGE AREA, FOLLOWING THE GUIDELINES FOR TIGHT STAIR SHAFT CONSTRUCTION.
 - ALL DOORS SHALL BE PROVIDED WITH TIGHT FITTING GASKETS, AND OPEN AGAINST THE DIRECTION OF ROOM/SHAFT PRESSURE.
23. MAXIMUM LENGTH OF FLEXIBLE DUCT SHALL BE 12 FEET. REFER TO INSTALLATION DETAILS FOR SUPPORT REQUIREMENTS. FLEXIBLE DUCT FLAME SPREAD RATING SHALL BE < 25 AND SMOKE DEVELOPED RATING SHALL BE < 50. USE FLEXIDUCT MODEL G-KM FOR LOW AND MEDIUM PRESSURE APPLICATIONS OR APPROVED EQUAL.
24. LOCATION AND DETAILS OF EQUIPMENT, DUCT ROUTING, AND CONNECTIONS ARE APPROXIMATE. COORDINATE FINAL LOCATIONS WITH OTHER TRADES. INSTALL IN ACCORDANCE WITH APPROVED SUBMITTALS AND DETAIL DRAWINGS WHEN APPLICABLE.
25. FOR RESIDENTIAL INSULATION ON DUCTWORK AND PIPING SEE ENERGY CODE CHAPTER 5 AND TABLES 5-11 AND 5-12.

DUCT INSULATION (R-VALUE)				LAST UPDATED: 07/21/10
DUCT TYPE	DUCT LOCATION	N-R INSULATION R-VALUE	RESID. INSULATION R-VALUE	REMARKS
SUPPLY, RETURN	NOT WITHIN CONDITIONED SPACE: ON EXTERIOR OF BUILDING, ON ROOF, IN ATTIC, IN ENCLOSED CEILING SPACE, IN WALLS, IN GARAGE, IN CRAWL SPACES	R-7	R-8	1,2,3
OUTSIDE AIR INTAKE	WITHIN CONDITIONED SPACE	VARIES	R-8	1,2,4,5
SUPPLY, RETURN, OUTSIDE AIR INTAKE	NOT WITHIN CONDITIONED SPACE: IN CONCRETE, IN GROUND	R-5.3	R-5.0	1,2
SUPPLY WITH <55° OR >105° AIR TEMPERATURE	WITHIN CONDITIONED SPACE	R-3.3	NOT REQ.	1,2

PIPE INSULATION (INCHES)										LAST UPDATED: 01/17/07	
SERVICE	FLUID TEMP °F	INSULATION CONDUCTIVITY		RUN-OUTS UP TO 2	NOMINAL PIPE DIAMETER (IN)						
		CONDUCTIVITY RANGE	MEAN TEMP RATING °F		1 & LESS	>1 TO 2	>2 TO 4	>4 TO 6	>6		
HWS&R	141-200	0.25-0.29	125	0.5	1.5	1.5	1.5	1.5	1.5	1.5	
HWS&R	105-140	0.24-0.28	100	0.5	1.0	1.0	1.0	1.5	1.5	1.5	
CHWS&R	40-45	0.23-0.27	75	0.5	0.5	0.75	1.0	1.0	1.0	1.0	
CHWS&R	<40	0.23-0.27	75	1.0	1.0	1.5	1.5	1.5	1.5	1.5	
CDWS&R	40-45	0.23-0.27	75	0.5	0.5	0.75	1.0	1.5	1.5	1.0	
CONDENSER WATER (FOR NON-ECONOMIZER SYSTEMS-INSULATION IS NOT REQUIRED)											

[illegible]

172505-9058

POR GL 1 & 2 & BLKS F & G OF THE 2ND SUPL PLAT OF LK WN SH LDS
TGW 2ND CL SHLDS ADJ ALL LY WLY OF W MGN LK WN BLVD-LESS POR N
OF S LN OF N 1076.80 FT SD GL 1 & ITS WLY PROD- LESS POR THOF S
OF LN BEG AT NXN 1902.66 FT S & PLW N LN GL 1 & W MGN LK WN BLVD
TH S 03-09-13 E ALG W MGN 75 FT TO TPOB OF THIS LN TH N
88-35-53 W TO INNER HARBOR LN & TERMINUS THIS LN - LESS POR
CONV BY REC 8907281497 AKA LOT B KK ALT LL #LL-91-50
REC 9104302101

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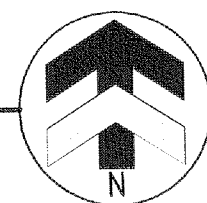
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KIRKLAND WA 98033

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Project Number	11-12-00572
Issue Date	5-04-2012

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NO SCALE





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Design	MC
Drawn	BB
Checked	MC
Scale	AS NOTED
Drawing Number	C-XXX-XXXX
Project Number	11-12-00572
Issue Date	5-04-2012

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REMARKS:

- 1 EXISTING
- 2 NEW VAV
- 3 PROVIDE SINGLE POINT POWER CONNECTION
- 4 PROVIDE ECM MOTOR
- 5 PROVIDE FN2 OPTION FOR ELECTRICAL LINE VOLTAGE ENCLOSURE
- 6 24V TRANSFORMER w/50 VA MIN RATING, UNIT CONTROLS AND, AUTO RESET 130 DEG. F. & THERMOSTAT BY CONTROLS CONTRACTOR
- 7 DEMAND CONTROL VENTILATION PROVIDED BY CONTROLS CONTRACTOR

- 1 RUN OUT SIZE SAME SIZE AS DIFFUSER NECK SIZE, U.N.O. ON DWGS
- 2 ALL DIFFUSERS TO HAVE SHEET METAL CAN PLENUM
- 3 STANDARD #26 WHITE FINISH
- 4 PROVIDE BORDER TYPE 3, LAY-IN TYPE
- 5 PROVIDE BORDER TYPE 1, SURFACE MOUNT TYPE
- 6 DIFFUSER CAN TO HAVE 1" SOUNDLINING WITH PERFORATED PLATE

- 1 RUNOUT SAME AS DWG NECK SIZE U.N.O. ON DWG
- 2 CORE ONLY - LAY-IN
- 3 SURFACE MOUNT FRAME
- 4 CHANNEL FRAME - LAY-IN
- 5 T-BAR LAY-IN
- 6 PROVIDE OPPOSED BLADE DAMPER (OBD)
- 7 PROVIDE DUCTBOARD PLENUM
- 8 PROVIDE SHEETMETAL PLENUM
- 9 STANDARD #26 WHITE FINISH
- 10 PROVIDE ALUMINUM GRILLES IN SHOWERS/HUMID AREAS
- 11 ALL NON-FERROUS MATERIALS IN MRI ROOMS



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Revisions

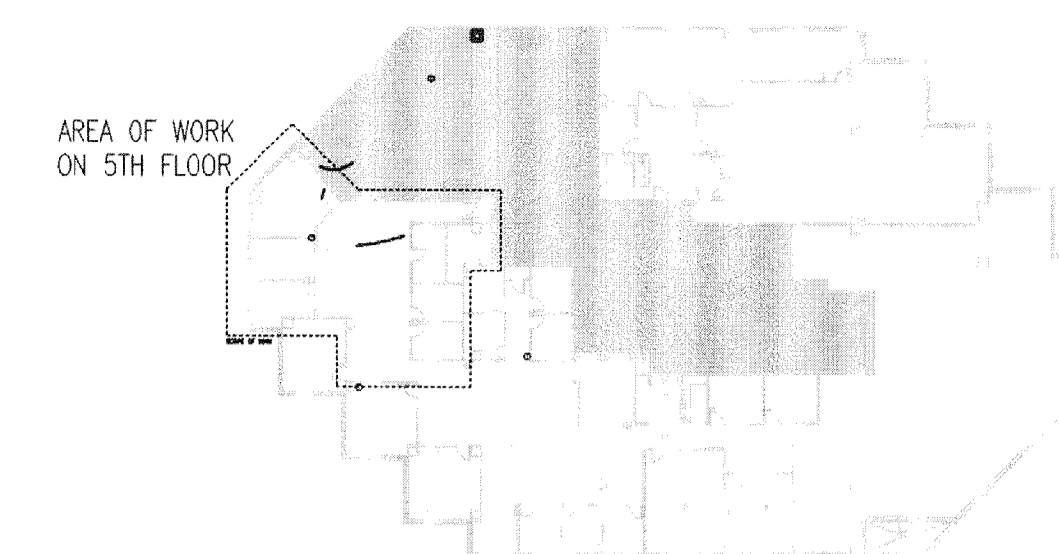
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Design Team

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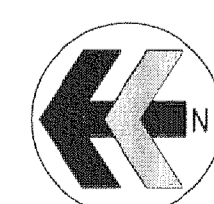
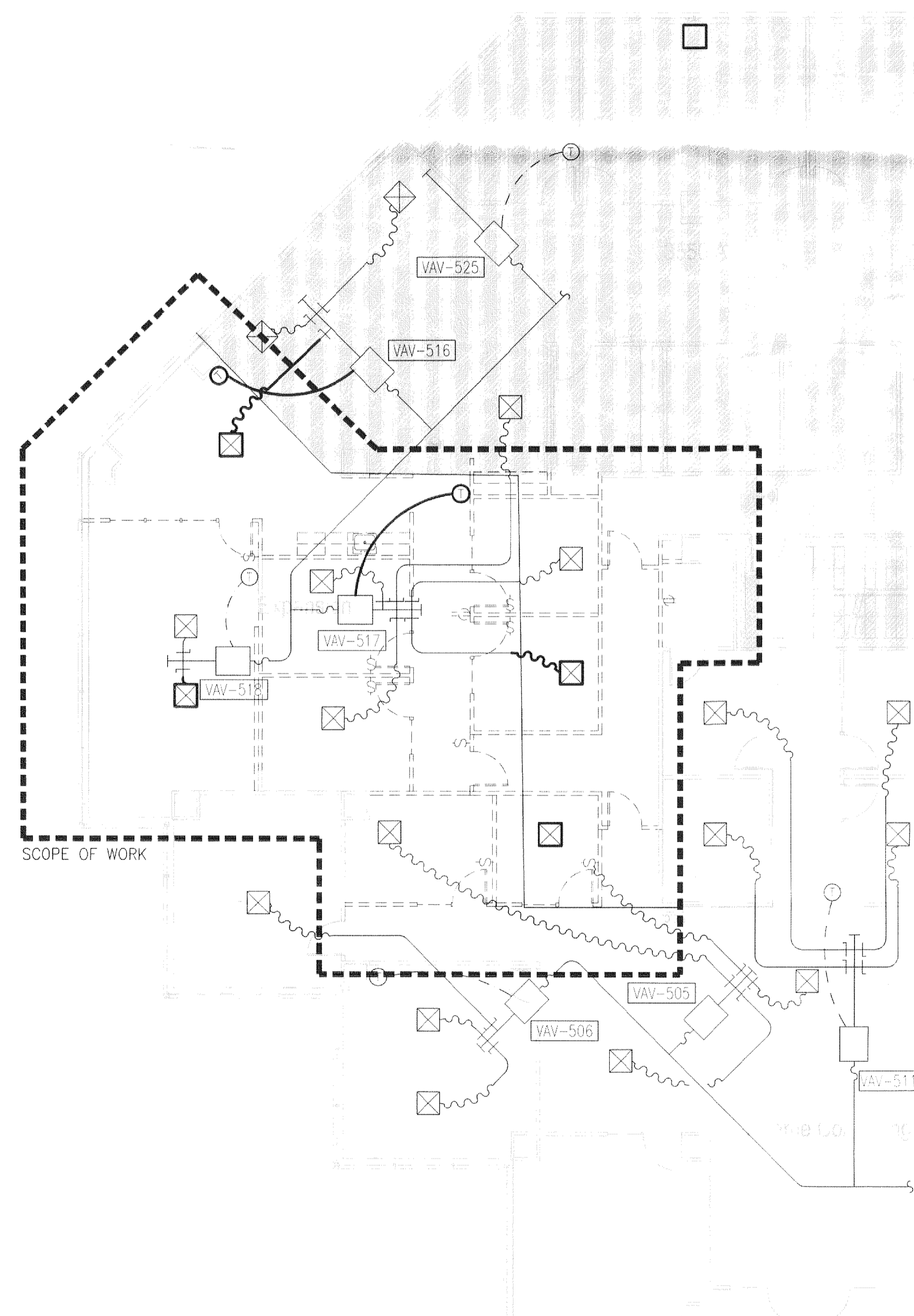
5TH FLOOR PLAN
- HVAC

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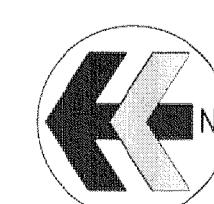
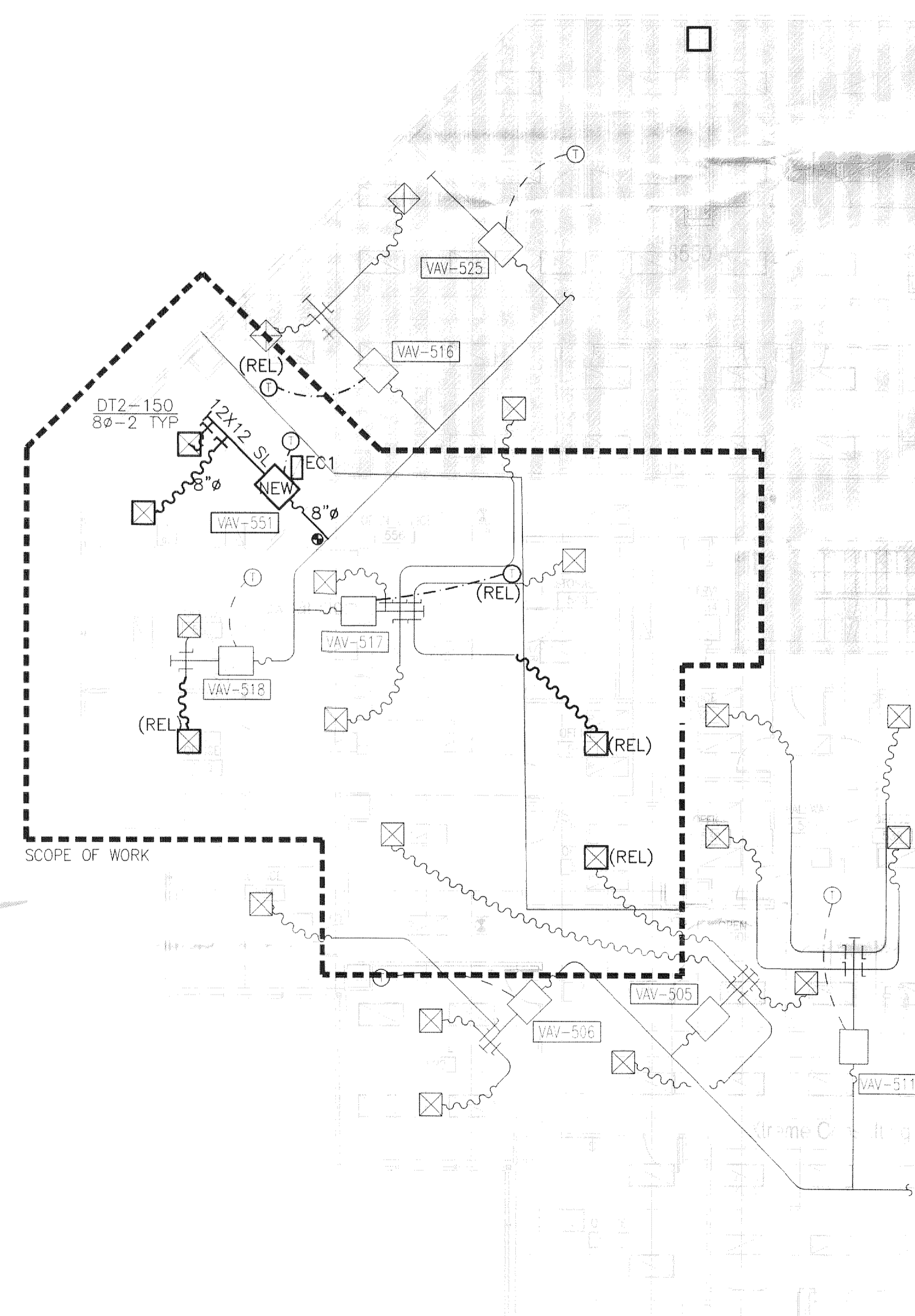
KEP PLAN

SCALE: NTS



LEVEL 5 DEMO FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"



LEVEL 5 FLOOR PLAN - HVAC

SCALE: 1/8" = 1'-0"

CITY OF KIRKLAND		APPROVED FOR SUBMITTAL	
Initials / Date		Type of Review	
Building	JS 5/9	Exp.	FT Reg
X Planning	JC 5/9		
X Public works	WA 5/9		

Do Not Route
to PW

(NO Easement work Proposed)

NO PLANNING REVIEW
NECESSARY. JCC

MNR12-00883
4100 Carillon Pt Way BLD 3020
Xtreme Consulting

5/17/12
Rolf

CHECK
PARCEL
FLAG